Vol. 110 No. 4 February 19, 1949

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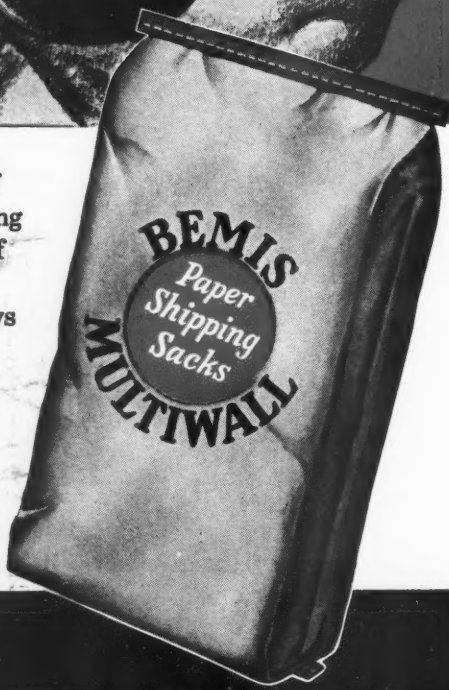

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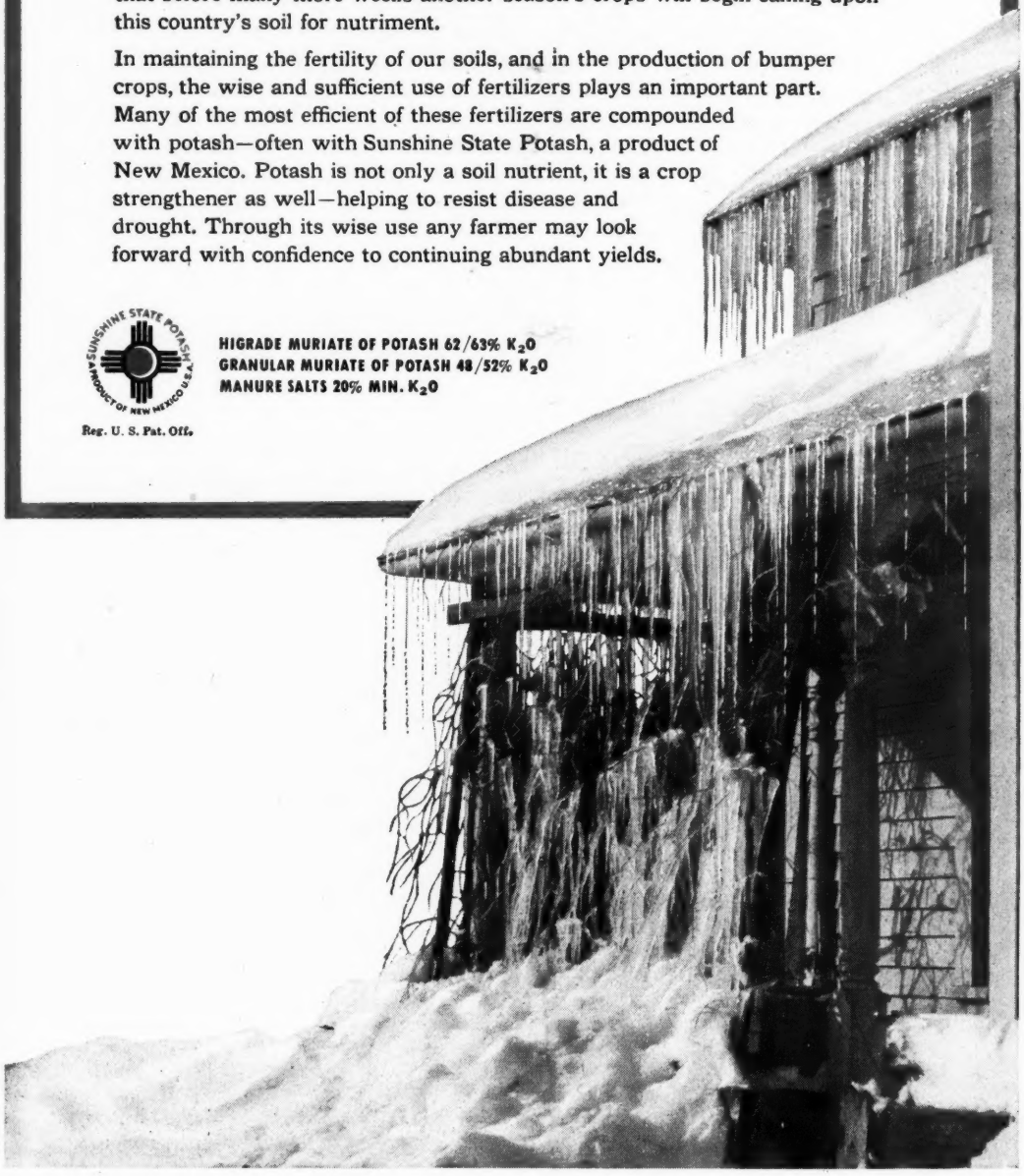

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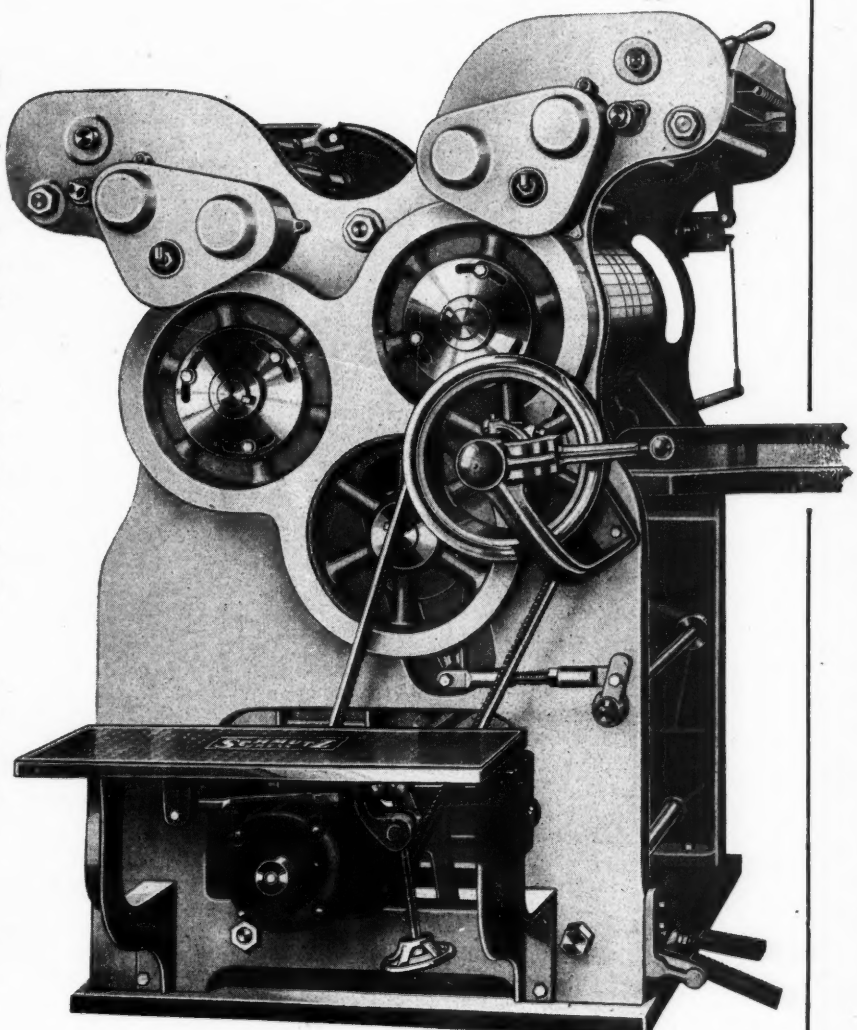

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The American FERTILIZER

Vol. 110 FEBRUARY 19, 1949 No. 4

TVA Defends Fertilizer Operations

Tennessee Valley Authority Replies to Criticism by Small Business Committee of House of Representatives

EDITOR'S NOTE: In our January 8th issue, we printed a summary of the recent report made by the Select Committee on Small Business appointed by the House of Representatives concerning the fertilizer operations of the Tennessee Valley Authority. This report criticized both accounting and distributional procedures adopted by TVA. We have recently received from the office of the Authority an analysis of the Committee's Report, which we are glad to publish in order that both points of view may be given fair consideration.

The report prepared by Paul O. Peters on Tennessee Valley Authority fertilizer operations and issued in December, 1948 as a staff report to the House Small Business Committee is inaccurate and misleading. Its criticisms of TVA fertilizer operations do not stand up in the face of the facts.

To begin with, the entire report is colored by an erroneous standard of judgment. It states that it "deals with TVA chemical-plant operations on a factual and commercial basis, not considering the intangibles authorized by the Congress." The "intangibles" thus dismissed are the very essence of TVA fertilizer activities. TVA is an experimental and not a commercial fertilizer producer. Congress directed TVA to develop new and better fertilizers, to devise and demonstrate commercially adaptable processes for their manufacture, and to produce them in quantities sufficient for large-scale testing and demonstrating on actual farms. By presuming commercial operation instead of experimental operation, the report treats TVA chemical operations not on a factual basis, as claimed, but on a hypothetical basis. Thus it is of no value as an appraisal of the extent to which TVA has achieved the objectives set by Congress

TVA Chemical Plant Operations Show Net Income

The report states that "By strict commercial standards TVA's chemical plant operations were conducted at almost a $4,000,000 loss in 1947." On the contrary, TVA chemical plant operations resulted in a net income of $155,664 in 1947. TVA chemical operations as a whole, including research as well as manufacturing, were conducted at a net expense of $1,430,834 in 1947.

The report arrives at its alleged $4,000,000 loss by charging chemical plant operations with three items which cannot properly be so charged under applicable accounting standards endorsed by private and government auditors alike. These items are (1) cost of fertilizers used by farmers participating in the TVA-sponsored test-demonstration farm, program, (2) cost of fertilizers used by TVA itself, and (3) expense of fertilizer and munitions research and development.

The test-demonstration farm program is an activity of the type traditionally supported by the Federal Government to promote the conservation of natural resources. Funds for the program are appropriated by the Congress. The fertilizer used in the program is manufactured in the TVA chemical plant. The test-demonstration program is

charged for the fertilizer at cost and the chemical plant is credited with an equal amount. This is an accounting practice normally followed by any company in which one branch uses the output of another branch. It is the only practice acceptable under the circumstances.

Costs of fertilizers used by TVA itself, a minor item, are similarly accounted for. The fertilizers are used mostly on TVA lands serving other programs; these programs are charged for the fertilizers at cost and the chemical plant is credited with an equal amount.

The expense of fertilizer and munitions research and development is not a component cost of fertilizer manufactured by TVA because the research is not conducted primarily to serve TVA's own manufacturing operations. TVA chemical research is a public service. From it TVA develops processes by which private industry can produce the kinds of fertilizers that must be produced if the fertility of America's soils is to be preserved. Thus the benefits, unlike the benefits of research by a private company, are not necessarily reflected in the end cost of the products manufactured.

The report asserts that "In balancing the books TVA accountants indulged in practices which would not be countenanced in private industry, as will be shown by the following operating statement: . . ." The so-called operating statement presented in the report at this point was not prepared by TVA. Presumably it was prepared by the author of the report. If, as is implied, the statement had been prepared by TVA, the assertion would be valid, for the statement is based on practices that assuredly would not be countenanced in private industry—or in government either

TVA Fertilizers Distributed to Benefit Farmers

The report finds that "With respect to the charges made to the committee that TVA fertilizers, in excess of quantities used in tests and demonstrations, and quantities requisitioned by Federal agencies, were being distributed exclusively to cooperatives and other favored outlets, a list of consignees to whom TVA products were shipped during the fiscal year 1947 appears to substantiate these charges." The report notes that "It was pointed out in several complaints that . . . this method of distributing . . . was grossly unfair and discriminatory to the tax-paying private producers of fertilizers."

TVA's obligation is not to the distributors of fertilizer but to the users of fertilizer, the farmers. TVA distributes its fertilizer through cooperatives because they are the only distributors who have shown both the willingness and the ability to distribute TVA fertilizer under conditions which enable TVA to carry out its statutory responsibilities. For example, contracts between TVA and its fertilizer distributors provide that TVA phosphate fertilizers shall be sold only to persons who agree to use them in soil-building crop rotations or on crops which are not intertilled; that TVA nitrogen fertilizers be sold only to persons who agree to use them in the interests of soil and water conservation; that TVA fertilizers, both phosphate and nitrogen, be sold in unmixed form; that distributors not impose any conditions upon resale of TVA fertilizers beyond the conditions set forth in the contracts; and that the distributors furnish TVA with data on distribution costs.

During the present acute shortage of nitrogen fertilizers, various units of the fertilizer industry have sought to buy fertilizers from TVA for use in making mixed fertilizers or for resale as such. TVA has told the National Fertilizer Association, as well as each of the individual firms making inquiry, that if the Association or any individual company would suggest a distribution arrangement under which TVA could meet its obligations to the farmers more effectively than under present arrangements, TVA would consider adopting the plan. To date the Association has not suggested any such plan, although it is now ten months since TVA invited it to do so. Several individual companies have advanced proposals, but no plan has yet been found that will satisfy both the requirements of the company and the responsibilities of TVA.

With respect to the so-called "other favored outlets" to which TVA products were consigned in 1947, examination of the list of consignees shows them to be purchasers of non-fertilizer by-products, purchasers of an animal-feed supplement, Federal and state agencies receiving TVA fertilizers for testing and experimentation, and Federal agencies to which TVA fertilizers were allocated for use in American occupied countries.

TVA Fertilizers Shipped Abroad to U. S. Army and Allies

The report insinuates that there is something improper or irregular about TVA's selling fertilizer for export. At one point it states that "quantities of TVA fertilizer found their way into export channels" and at another that TVA "resorted to paying commissions to a cooperative in order to move ammonium

nitrate into export channels." There is no basis in fact for such insinuations.

All sales of TVA fertilizer for export have been made in order to comply with directives of Federal agencies authorized to allocate fertilizers for export; all TVA exports have been within the authority granted TVA by Congress in the TVA Act, which provides in section (5 (m) that:

> No products of the Corporation shall be sold for use outside of the United States, its Territories and possessions, except to the United States Government for the use of its Army and Navy, or to its allies in case of war.

The first shipment of TVA fertilizer for export was made in January, 1942, after the United States had already entered the war. The wat is still in progress insofar as section 5 (m) of the TVA Act is concerned, as a result of an express decision by the Congress to that effect. All TVA fertilizers exported have been for the use of the United States Army or to allied countries.

Most of the fertilizer sold by TVA for use outside of the United States has been ammonium nitrate. Ammonium nitrate fertilizer was allocated during and after the war by the War Production Board and then by the Civilian Production Agency, successor to WPB. Control of ammonium nitrate fertilizers for export is currently vested in the Office of Materials Distribution, Department of Commerce.

Sales of TVA ammonium nitrate fertilizer to allied countries have been handled on a commission basis by Associated Cooperatives Inc., of Sheffield, Ala. The report concludes, however, that "there appears to be no justification for the payment of these commissions at all."

The commissions were paid for services rendered, Associated Cooperatives handling all the details for each export transaction from start to finish. This involved verification of authority from the foreign government involved, handling of all financial details, handling of transportation arrangements, and inspecting the material on its arrival at port of embarkation. In comparison with domestic sales, the amount of correspondence, telephone calls, telegrams, and personal travel in connection with the foreign sales was all out of proportion to the volume of business done, the average foreign sale taking three to four months between the initial contact and the loading of the material aboard the vessel.

The practice of handling such export sales through a broker was discontinued by TVA in July, 1948, when the volume of ammonium nitrate fertilizer allocated to foreign countries had diminished to the point where TVA could handle the sales with its existing staff.

TVA Process Improvements Cheapen Cost of Fertilizer

The report states that "TVA has not substantially contributed to cheapening the production of fertilizer and fertilizer ingredients," one of the objectives set forth by Congress in the TVA act. In elaboration of this charge, the report claims that "It cannot be shown from the record that TVA has achieved the objectives in cheapening the process for producing ammonium nitrate."

The facts are that prior to 1943 when TVA, in cooperation with the Department of Agriculture and others, perfected a process for conditioning ammonium nitrate to make it suitable for fertilizer use, there was virtually no commercial production—cheap or otherwise—of ammonium nitrate fertilizer. Within just a few years, ammonium nitrate became the source of nearly 20 per cent of all fertilizer nitrogen used in the United States. Ammonium nitrate fertilizer contains 32.5 to 33.5 per cent nitrogen. Sources of solid nitrogen most commonly used before ammonium nitrate came on the market were sodium nitrate, containing 16 per cent nitrogen, and ammonium sulfate, 20.5 per cent nitrogen. Unit prices of nitrogen in these materials, based on quotations in the November 29, 1948, issue of *Oil, Paint and Drug Reporter*, the same issue cited in the report, are as follows:

Ammonium nitrate, bagged	$1.69 to $1.73
Ammonium sulfate, bulk only	2.20
Synthetic sodium nitrate, bagged	3.03
Chilean sodium nitrate, bagged	3.22

A further assertion made in support of the statement that TVA has failed to cheapen the production of fertilizers is that "During World War II, while fertilizers were being requisitioned from both private industry and TVA, for shipment abroad under the lend-lease program, private industry operating under OPA supplied triple superphosphate f.o.b. Tennessee production points at 75 cents per unit of P_2O_5, while at the same time Treasury Procurement Division, now the Bureau of Federal Supply, was billed as high as $1.01 per unit by TVA."

This is grossly misleading. Treasury Procurement did pay TVA $1.01 per unit of P_2O_5 on one shipment, but on one shipment only, in order to compensate TVA for losses sustained on earlier shipments so that, in

(Continued on page 30)

Woodrum Expects Large Convention Attendance

In view of the "current indications of attendance," individuals and firms desiring reservations for the Fourth Annual Convention of the American Plant Food Council at The Mount Washington Hotel, Bretton Woods, N. H., June 19–22 should make their reservation requests at once, according to Clifton A. Woodrum, president of the Council.

'There are no shortages of rooms at the present tme," he added, "but early registratons and requests indicate a large attendance which emphasizes the importance of making reservations as soon as possible."

All requests for hotel and transportation reservations for non-member firms should be sent to the American Plant Food Council, 910 17th St., N. W., Washington 6, D. C.

In connection with the convention, Mr. Woodrum announced the appointment of two committees:

Hospitality Committee—G. T. Cunningham, Armour Fertilizer Works, Atlanta, Ga., Chairman; J. D. Stewart, Jr., Federal Chemical Corp., Louisville, Ky.; J. A. Woods, Jr., Potash Company of America, Raleigh, N. C.; Malcolm Hunter, Virginia-Carolina Chemical Corp., Richmond, Va. and F. B. Stephenson, Robertson Chemical Corp., Norfolk, Va.

Golf Committee—A. B. Baker, Jr., Bradley & Baker, New York City, Chairman; A. B. Baker, Bradley & Baker, New York City; Charles Burroughs, Jr., F. S. Royster Guano Co., Norfolk, Va.; Deane Gidney, U. S. Potash Company, New York City; W. F. McLane, Lyons Fertilizer Company, Tampa, Fla. and John W. Ground, III, Thurston Chemical Co., Joplin, Mo.

Wells Appointed Sales Manager for Chase Bag Oregon Office

The appointment of James W. Wells to the position of sales manager of Chase Bag Company's Portland, Oregon, Branch has been announced by R. N. Conners, vice-president and general sales manager.

With the exception of his wartime service as a Medical Corps captain, Mr. Wells has represented the Sales Staff of the Chase Portland Branch since it was established in 1939. He succeeds Robert R. Loch who was recently made manager of the newly acquired Chase factory in Los Angeles.

Superphosphate Production Sets Record in 1948

Production of superphosphate in the United States during 1948 was higher than in any previous year, totaling 10,555,000 equivalent short tons (18% A. P. A. basis), an increase of 1.4 per cent over the quantity produced in 1947. Approximately 88 per cent of the year's output (9.3 million tons) was in the form of normal superphosphate; the remaining 12 per cent consisted of 469,000 tons of concentrated (45% A. P. A. basis) superphosphate, the equivalent of 1,172,000 tons of normal (18% A. P. A. basis) superphosphate, and 61,500 tons of wet base goods (18% A. P. A. basis). The rise in total production over 1947 was due mainly to an 18 per cent increase in the output of concentrated superphosphate; the other two types were produced in quantities substantially equal to those of the previous year. Total production in March exceeded a million tons, the highest amount on record for a single month.

PRODUCTION OF SUPERPHOSPHATE
Short Tons

1948	Normal 18% A.P.A.	Wet Base Goods 18% A.P.A.	Concentrated 45% A.P.A.	Total Basis 18% A.P.A
January	845,660	5,023	33,980	935,633
February	799,627	7,044	36,480	897,871
March	939,802	7,546	37,752	1,041,728
April	872,400	7,552	39,208	977,972
May	876,312	4,086	39,792	979,878
June	736,246	3,044	36,002	829,295
July	644,954	2,370	38,168	742,744
August	731,396	4,643	42,094	841,274
September	685,662	3,980	44,924	801,952
October	711,224	5,192	44,892	828,646
November	749,265	5,433	39,505	853,461
December	729,589	5,583	35,914	824,957
Total:	9,322,137	61,496	468,711	10,555,411

Senate Committee Staff Urges More Army Ammonia for Domestic Fertilizer Use

On February 7th, Senator Thomas of Oklahoma inserted in the Congressional Record a report on Army ammonia plants by John Pillsbury, formerly a staff member of the Senate Committee on Appropriations. The report recommends that Congress terminate at the close of the current fiscal year the legislative directions to the Army respecting its participation in the commercial fertilizer export program and making available a portion of its anhydrous ammonia production to private fertilizer producers.

These directions were written into the ECA appropriation act (Public Law 793) and the second decontrol extension act (Public Law 606) last year, largely at the insistence of the senate. They provided that the Army should meet 50 per cent of the fertilizer export commitments of the United States in non-occupied areas under the IEFC program, and that the Army should make available 10 per cent of its anhydrous ammonia production to domestic ammonium sulphate producers facing shutdowns for lack of the material.

Mr. Pillsbury advised the senate committee, shortly before he resigned last year, that the conditions which motivated Congress in writing these directions into law have so changed that they are no longer necessary.

"Since the enactment of the law, two major changes have occurred which may make it advisable to discontinue the provisions of Public Laws 606 and 793," the report stated.

"1. The Army has increased its production.

"2. The needs of the Army for its occupied areas will be reduced sharply. The decreased demand will result in major part from the change in status of Korea. Korea will cease to be an occupied territory after January 1, 1949, when the appropriation made to government and relief in occupied areas will be transferred to the Economic Cooperation Administration."

"Because of these two factors," the report continued, "Army production will greatly exceed demands for the occupied areas. Without government regulation the production of the Army plants which is not required for the occupied areas will move into normal commercial channels. No new legislation will be required to release a sizeable portion of Army production to relieve domestic-fertilizer shortages or to meet export requirements for the non-occupied areas.

Army Production

"Ammonia (NH_3), basic in the production of nitrogenous fertilizers, is produced for the Army at three plants. Operation of a fourth plant will begin July 1, 1949.

"The forecast for production of these plants for 1949, given in terms of NH_3, is 360,400 short tons. An increase to 462,800 short tons in 1950 is predicted on the following production schedule:

	Short Tons NH_3
Cactus	147,700
Morgantown	227,200
Ohio River	65,500
San Jacinto	22,400
Total	462,800

"Accordingly, the total demand for the occupied areas in 1950 will require approximately 150,000 short tons of contained nitrogen out of total Army production of approximately 381,000 tons of contained nitrogen.

"After the Army meets the needs of the occupied areas in fiscal 1950, the amount of nitrogen remaining for diversion to domestic use or export will be substantially greater than existed this year. No legislation similar to that found in Public Laws 606 and 793 is required to make this surplus available to United States and foreign agriculture.

The 10-Per Cent Program

"There exists adequate cause for the immediate elimination of the 10 per cent program established in Public Law 793. In accordance with the terms of the law, 10 per cent of the Army production, or approximately 30,000 tons of NH_3, has been allocated to relieve domestic shortages which last spring threatened the shut-down of certain key plants in the Northwest which manufactured fertilizer.

"The 30,000 tons of ammonia allocated has proved more than adequate to cover the statutory preferences of the law.

"The allocation of ammonia in the 10 per cent program was entrusted to the Department of Commerce. The Department reports that allocations have been made with difficulty and have not given the over-all relief intended by the Congress to reduce fertilizer shortages throughout the Nation. Officials of the Department recommend the abandonment of the 10 per cent program.

(Continued on page 28)

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New Leasing Regulations for Western Phosphate Deposits

Wider opportunities for the utilization of the phosphate bearing lands of the west for the manufacture of fertilizer are provided in new regulations issued by the Department of the Interior on January 25th.

Preparation of the regulations followed three years of special study by the department and public hearings on the proposed rules last August in Pocatello, Idaho. Drafting of the final rules was completed in cooperation with representatives of the phosphate industry and others directly concerned with the western phosphate fertilizer problems, and with a special committee of the National Minerals Advisory Council.

The new regulations authorize the long-time lease of public land tracts for the exploration and development of phosphate under provisions stimulating the continuity of industry's participation in the program and the payment of rentals and royalties to the Government from the resultant production. Two types of leases are contemplated under the new rules, a "non-competitive lease" to promote the exploration and discovery of commercial phosphate deposits in unexplored areas of the public land, and a "competitive lease" for the development and production of the minerals on areas already known to contain commercial phosphate deposits, or in which there is competitive interest.

Under the regulations, which will be administered by the Bureau of Land Management in the department, opportunity is given for the leasing of larger tracts of public land than before in the search and development of phosphate deposits. However, monopoly of the natural resource is prevented by stipulations that no person, association or corporation may hold at any one time more than 5,120 acres in any one state or more than 10,240 acres in the United States.

Any attempt to "lock up" resource areas under lease without exploration or development operations is prohibited by requirements in the regulations that one-third of proposed expenditures for exploration or production shall be made the first year. Moreover, each lease will contain appropriate conditions fixing a minimum annual production of the lease depositis beginning with the fourth year from date of the lease. Exemption from these requirements is provided if production is interrupted by strikes, the elements or casualties not attributable to the lease holder, or if prevailing market conditions make it unfeasible to undertake phosphate production.

The phosphate leases will not bear a specific termination date, but will be subject to revision as to royalty, rental and other requirements at the end of each twenty-year period. However, they are subject to cancellation if phosphate is not discovered within three years or if production is not begun by the fourth year after issuance.

Premiere of New N. F. A. Film

On February 8th a representative group of fertilizer executives and agricultural officials attended the first showing of the new sound motion picture produced by the National Fertilizer Association. The presentation of the film was preceded by a reception at the Mayflower Hotel, Washington, in honor of Dr. Russell Coleman, the new president of the Association.

The picture, which is entitled "What's in the Bag" tells the story of the fertilizer elements contained in a bag of fertilizer and shows the various processes through which they pass in order to reach their final destination. With a running time of 18 minutes, this film should render valuable service in acquainting farmers with the production problems of the fertilizer manufacturer. The Association is arranging distribution to members, agricultural workers and farmer groups.

Mathieson Buys Southern Acid and Sulphur Company

In a letter to stockholders of Mathieson Chemical Corporation, Thomas S. Nichols, president, announced on February 7th that as a result of negotiations with the directors and principal stockholders of Southern Acid and Sulphur Company, Inc., Mathieson is contracting to purchase the business and assets of that company. Under terms of the agreement, Mathieson will distribute 265,000 shares of its authorized but unissued common stock to the common stockholders of Southern Acid and Sulphur Company, Inc.

Principal business of Southern Acid and Sulphur Company, Inc., is the production and sale of sulphuric acid, ammonium phosphate, ammonium sulphate, phosphoric acid, superphosphates, mixed fertilizers, and sulphur. Acquisition of this company will further diversify the line of basic chemicals now manufactured by Mathieson and will add to its present operations a business that is producing satisfactory earnings, the report to stockholders stated. This extension of the operations of Mathieson should substantially enhance its earnings prospects for the future, Mr, Nichols added.

Plants of Southern Acid and Sulphur Company, Inc., are located at Houston, Beaumont, Port Arthur, Texas; Shreveport, La.; and Little Rock, McKamie, Macedonia, Ark. Net sales of the company totaled $21,800,000 for the twelve months ended December 31, 1948, and resulted in a net profit of approximately $2,620,000.

At the meeting of Mathieson stockholders held in March, 1948, an increase in the common stock of the corporation from 1,000,000 to 1,500,000 shares was authorized for the purpose of providing additional shares to finance the expansion of the corporation. Mr. Nichols pointed out that a major part of this expansion has been accomplished without issuing these shares.

Sulphur Production in 1948 Makes Record

Production of sulphur in the United States during 1948 totaled 4,869,211 tons, an increase of almost 10 per cent over the previous record of 4,441,214 tons in 1947. These figures have recently been released by the U. S. Bureau of Mines. Shipments from the mines during 1948 came to 4,977,031 tons, compared with 4,828,103 tons in 1947. At the end of 1948, producers' stocks at the mines, in transit and in warehouses, amounted to 3,225,014 tons, a drop of 5 per cent from 3,371,034 tons on hand at the end of 1947.

OBITUARY

Ashmead F. Pringle

Ashmead F. Pringle, founder and president of A. F. Pringle & Co., Charleston, S. C., died in his office on February 5th. He was 65 years of age.

Mr. Pringle, who was a member of one of the old Charleston families, started his connection with the industry in the sales department of the Combahee Fertilizer Company. In 1919 he aided in the formation of the Merchants Fertilizer Phosphate Company of Charleston, serving first as treasurer and afterwards as president. Mr. Pringle later organized A. F. Pringle & Co. with which the Merchants Company was merged.

A regular attendant at the meetings of the industry, Mr. Pringle had a wide circle of friends from every section of the industry, who sincerely mourn his passing.

January Tax Tag Sales

Sales of fertilizer tax tags in the 14 states requiring their use were equivalent to 1,293,000 short tons during the month of January, according to reports submitted by State control officials to The National Fertilizer Association. This figure was 10 per cent below that reported for January, 1948, and 7 per cent below that for January, 1947.

In the ten Southern States, sales amounted to 1,030,000 equivalent tons, or 12 per cent below those of a year ago and 14 per cent below those of two years ago. Eight of these states reported tonnages lower (by from 2 to 42 per cent) than those of last January, the greatest decline having taken place in Georgia; the remaining two states, Florida and Arkansas, reported tonnages considerably higher this January than last; Arkansas more than doubled last year's (figure of 13,000 tons, while Florida reported a 36 per cent increase over last January's 85,000 tons. Of the total January tag sales, 80 per cent were accounted for by the Southern States, as compared with 82 per cent a year ago and 72 per cent two years ago.

The four Midwestern States reported sales during January equivalent to 263,000 tons, or about 1 per cent more than during last January, and over 43 per cent more than in January 1947. Kentucky and Missouri tonnages exceeded those of last January by 2 and 47 per cent respectively, while Indiana and Kansas tonnages were below those of a year ago.

During the first seven months of the current fiscal year, sales of tax tags in the 14 reporting states totaled 4,425,000 equivalent

(Continued on page 28)

FERTILIZER TAX TAG SALES
Compiled by the National Fertilizer Association

State	January				July-January		
	1949 Tons	1948 Tons	1947 Tons	% of 1947–48	1948–49 Tons	1947–48 Tons	1946–47 Tons
Virginia	90,767	95,406	93,614	88	281,673	320,588	333,355
N. Carolina	307,328	312,234	322,218	93	771,266	832,272	848,652
S. Carolina	173,454	194,745	194,895	77	403,394	534,337	485,002
Georgia	131,695	226,211	200,590	89	391,658	438,729	432,427
Florida	115,793	85,008	97,233	88	463,967	528,889	639,353
Alabama	88,085	123,107	167,200	102	274,449	269,559	388,100
Tennessee	26,229	29,567	39,565	114	167,801	147,828	141,175
Arkansas	28,776	13,441	25,600	199	117,841	58,805	80,300
Texas	49,968	67,823	43,074	100	259,274	258,497	214,934
Oklahoma	18,350	22,059	13,350	103	63,600	61,516	41,795
Total South	1,030,445	1,169,601	1,197,339	93	3,200,266	3,451,020	3,605,093
Indiana	96,532	109,003	80,587	104	603,607	582,133	472,220
Kentucky	88,355	86,604	67,253	99	299,684	302,001	165,773
Missouri	67,881	46,028	26,890	156	253,637	163,041	147,868
Kansas	10,275	18,790	8,788	73	67,873	93,470	51,914
Total Midwest	263,043	260,425	183,518	107	1,224,801	1,140,645	837,775
Grand Total	1,293,488	1,430,026	1,380,857	96	4,425,067	4,591,665	4,442,868

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NEW YORK

No Spot Supplies of Sulphate of Ammonia Available. All Nitrogen Materials Moving on Schedule. Organic Prices Show Downward Trend but Price Levels Still Above Fertilizer Range. Mixing Season Brings Better Movement of Superphosphate. Arrivals of French Potash Reported.

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, February 16, 1949

Sulphate of Ammonia

Numerous buyers were inquiring for additional supplies, but with leading producers all under contract for their estimated output for the next few months, offerings were difficult to locate.

Nitrate of Soda

A good demand for this material is noted from various sections and importers are shipping material out as fast as boats arrive from Chile.

Nitrogen Solutions

Some easing of the tight situation in this material was noted in certain sections as supplies are moving more freely to buyers. All material has been contracted for during the current season.

Nitrogenous Tankage

Material was available from various production points as some buyers held up shipping instructions, due to the crowded condition of their plants.

Organics

Tankage and blood were quiet marketwise with a tendency toward lower prices in sympathy with various feed materials which have declined in price rather sharply the past week or so. Soybean meal declined about $5.00 per ton with some resales being made even under these figures. Demand was poor as buyers waited on the sidelines until the market settled down. Cottonseed meal was lower and some resale material was available at under the current market. The tankage and blood market were nominally around $9.00 per unit of ammonia ($10.94 per unit N), f.o.b. shipping points but with firm bids it was thought these prices could be bettered.

Fish Meal

The small amount of material that is available is being sold at high prices and the market is quoted at about $175.00 per ton, which is about as high as this material has sold in recent years. Fertilizer manufacturers are unwilling to pay these asking prices and the material that is actually being sold is moving to the feed trade.

Castor Pomace

Scattered sales are being made at $24.00 per ton, f.o.b. production points, and while the supply is not too heavy, additional material is available on this basis. Buyers are showing more interest the past week.

Bone Meal

This material is in very short supply and many buyers cannot obtain necessary supplies. This situation will no doubt prevail for the balance of the season. Practically no offerings are noted.

Hoof Meal

Some material was sold at $7.00 per unit of Ammonia ($8.51 per unit N), f.o.b. production points, and very little material was offered. Some material was being sold for industrial purposes.

Garbage Tankage

Inquiry for this material was slow and some resale material was reported available from several directions.

Superphosphate

A better movement of this material was reported as practically all fertilizer manufacturers are now at the height of their mixing season. Whether the demand will be heavy enough to clean up surplus stocks, remains a question.

Potash

Producers were shipping on contracts and some imported French potash, which had already been contracted for, arrived at several Atlantic ports.

CHARLESTON

Superphosphate Situation Tightening. Organic Materials Priced at Lower Levels. Potashs Shipments Continue on Schedule

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, February 14, 1949.

Superphosphate in certain areas is tightening. Potash continues short of demand and nitrogen continues the shortest in supply of the three prime ingredients used in fertilizers. No easement in this nitrogen shortage is expected in the next several months.

Organics.—In the face of rather slack interest, some organics have weakened in price. Nitrogenous Tankage is now offered at $3.00 to $4.00 per unit of ammonia ($3.65 to $4.86 per unit N) in bulk f.o.b. production point, depending on the producer's location. Imported organics continue above fertilizer buyers' views.

Castor Pomace.—For nearby shipment, some castor pomace is available at $21.00 per ton in bags, f.o.b. northeastern production points. The majority of tonnage is moving against existing contracts.

Dried Ground Blood.—The market has weakened and the price, as of February 10, prevailing in New York, was $9.75 to $10.00 per unit of ammonia ($11.85 to $12.15 per unit N) and in the Chicago area, $8.50 to $8.75 ($10.33 to $10.63 per unit N).

Potash.—Demand continues steady and no inventories at the mines can be accumulated, due to the steady movements to manufacturers. No change in price has been noted.

Phosphate.—Export sales are sharply off, compared with this time last year. Domestic demand continues in seasonal dimensions.

Superphosphate.—Shipments to users continue to show increasing volume and it appears at this time that in certain sections superphosphate may again be fairly tight. Triple superphosphate continues exceedingly tight.

Sulphate of Ammonia.—The prime movement is to buyers already under contract. Supplies are exceedingly short of demand.

Ammonium Nitrate.—Demand for this material continues greater than the supply. No easement in this situation in the immediate future is expected.

Nitrate of Soda.—The market is firm and tight with demand far in excess of supply, even though imports for eleven months of 1948 were greater than for the corresponding period in 1947.

PHILADELPHIA

Nitrogen Demand Still Far Ahead of Supply. More Chilean Nitrate Expected. Superphosphate Shipments Improve. German Potash Production Increases

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, February 14, 1949.

Demand for chemical nitrogen continues from mixers and also for side dressing purposes. The supply is much below requirements and very little resale material is offered. It is fully expected that this will be a very busy month in the fertilizer trade.

Sulphate of Ammonia.—Heavy demand prevents any easement in the market position, and production is unable to keep up with requirements. Practically no resale goods are obtainable.

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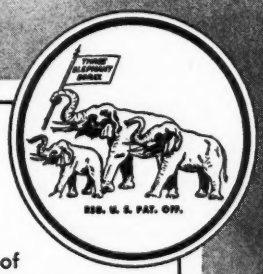

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Nitrate of Soda.—Demand continues ahead of supply although deliveries are keeping up to schedule. The reopening of an old plant in Chile is reported and this is expected to increase the supply several thousand tons per month.

Ammonium Nitrate.—While shipments are moving against contracts, the demand is very active for increased tonnage and the supply is wholly inadequate. An advance of $3.50 per ton in the price of Ammonia-Nitrate-Dolomite is reported.

Castor Pomace.—While production is mostly under contract, it is possible to obtain a limited tonnage for prompt delivery.

Blood, Tankage, Bone.—Trading has been light in blood and tankage with price nominally at $9.00 to $9.50 per unit ($10.94 to $11.55 per unit N) per ton. Bone meal continues in scarce supply with production practically all under contract. Some prompt material may be had at $57.50 to $70.00 per ton, depending on the grade. Hoof meal is nominal at $7.00 per unit of ammonia ($8.51 per unit N) in the West.

Fish Scrap.—Market is stronger, but quiet. Menhaden meal is priced nominally at $150.00 to $175.00, depending on grade.

Phosphate Rock.—Production keeps up with requirements although shipments from the mines have slowed down, due to physical inability of mixers to accept deliveries. This situation is expected to ease up shortly.

Superphosphate.—Shipments are moving out in better volume and it is expected that conditions will be greatly improved before the end of the month. No price changes are reported.

Potash.—Deliveries on contract are moving per schedule, although the demand is ahead of production. Production in Germany is increasing rapidly.

CHICAGO

Buying Interest Slackens in Organic Materials Market and Prices Show Declines

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, February 14, 1949.

The market on animal ammoniates in the Middlewest has turned weaker. Some price reductions have already been established and present indications are that the markets may decline still further as buying interest is cautious and very narrow.

Digester tankage is quoted nominally at $110.00 per ton and meat scraps at $100.00 per ton. Material can be bought at these prices but buyers are slow in accepting. Dry rendered tankage is $1.65 to $1.75 per unit of protein. Unground wet rendered tankage and dried blood at $8.25 to $8.50 per unit of ammonia ($10.02 to $10.33 per unit N). Steamed bone meal ranges from $65.00 to $70.00 per ton and raw bone meal $60.00 to $65.00.

No Corn Acreage or Marketing Quotas for 1949 Crop

The U. S. Department of Agriculture announced on January 31st that no corn acreage allotments will be determined for 1949 production and that no corn marketing quotas will be in effect for the marketing year beginning October 1, 1949. It will, therefore, not be necessary to establish a commercial corn-producing area for the year.

This action has been taken under the provisions of the controlling legislation. The Agricultural Adjustment Act of 1938, as amended, directs the Secretary of Agriculture to make the necessary determinations and to issue proclamations with regard to corn acreage allotments not later than February 1.

The decision that there will be no quotas or acreage allotments for 1949 corn is in line with the declared policy of the Act to insure

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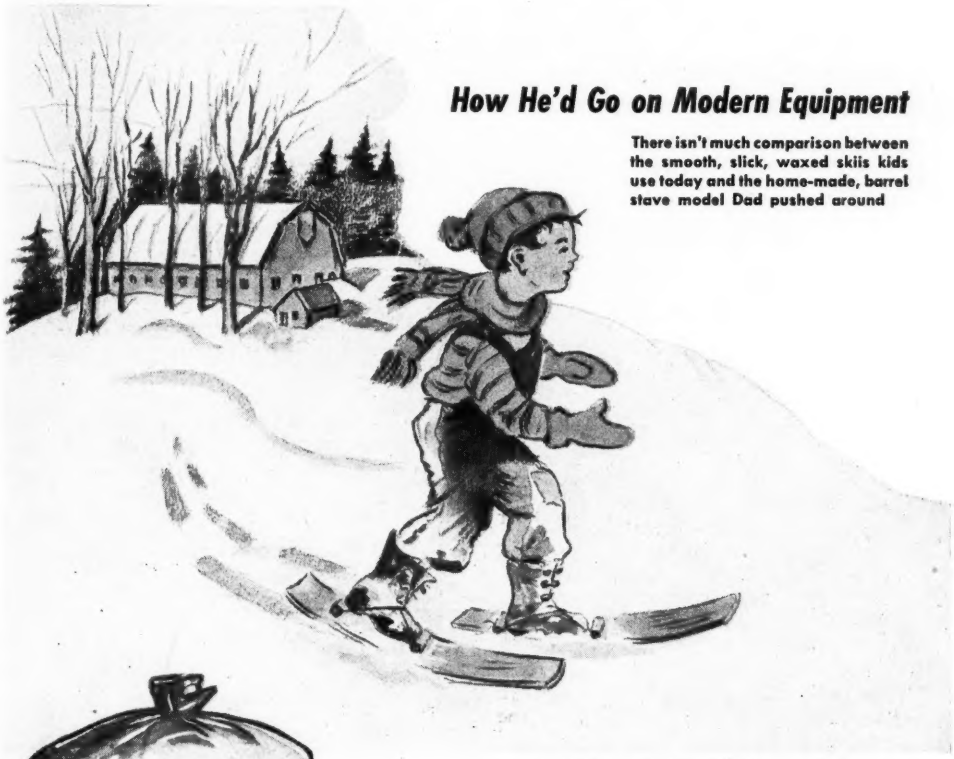

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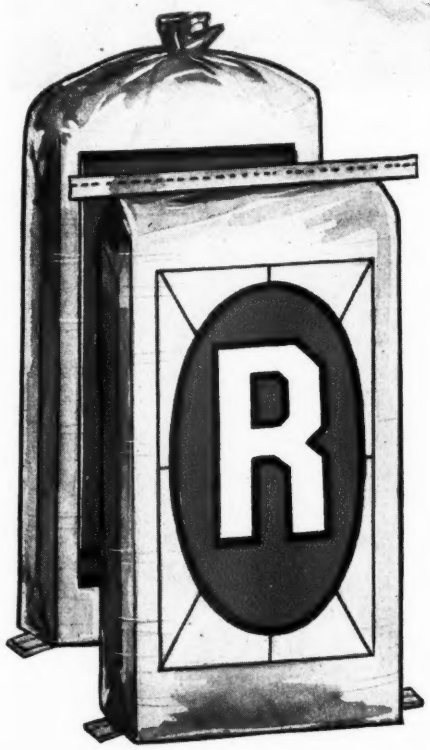

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continuous and stable supplies in the interests of both producers and consumers. The Act includes provisions to insure supplies adequate to meet domestic consumption and export needs "in years of drought, flood, or other adverse conditions," and further directs that consideration be given to maintenance of supplies to meet consumer demand "at prices fair to both producers and consumers."

Basing their decision on an estimated 1949 corn crop of 3,000,000,000 bushels and a carry-over of 700,000,000 bushels, the department figures an estimated consumption of 3,180,000,000, which includes exports of 150,000,000 bushels. This would give an adequate reserve supply, which the department feels is necessary if livestock, dairy and poultry production is to be stabilized at the high levels desired to meet domestic and world needs.

It was realized that advanced estimates of yield are at the mercy of uncertain weather conditions. For example, the 1947 and 1948 corn crops, grown on about the same acreage, were only 2,384,000,000 bushels in 1947 and 3,500,000,000 in 1948. However, both corn producers and industry representatives, formally asked to express their views, have been almost unanimous in the recommendation that no acreage allotments or marketing quotas be established for the 1949 crop. The action announced by the Department of Agriculture is based upon these recommendations, upon the declared policy of Congress, and upon the facts of the situation.

New Payloader Literature

An attractive new catalog has been prepared by the Frank G. Hough Co. covering the new 4-wheel-drive Model HM Payloader. This literature contains complete specifications on this big 1½ cubic yard tractor shovel and numerous action views from a variety of jobs. Many outstanding and unusual features and advantages of this big tractor-shovel are also illustrated—hydraulic bucket control, several speeds in either direction, fast forward-reverse control, power boosted steering, controlled dumping, operator visibility, ground-gripping traction provided by large earth mover tires and four wheel drive. The 1½ yard Model HM is the newest of the complete line of Payloaders which also includes the 1¼ yard Model HL, the ¾ yard Model HF and the 10½ cu. ft. Model HA. Copy of this catalog is available from the manufacturer, the Frank G. Hough Co., 704 Sunnyside Avenue, Libertyville, Illinois.

Secretary Brannan Reports High Agricultural Production

The past year of high production on United States farms, with continued high level domestic consumption and exports, was accompanied by increasing evidence of need for postwar readjustment, according to Secretary of Agriculture, Charles F. Brannan, in his report to the President for 1948. This report, released on February 8th, records further high level farm earnings, but points out that the costs of farm production were higher than in 1947. After paying production expenses plus interest and taxes, farmers had left somewhat less of net income than the approximately $18,000,000,000 of the previous year.

Production of crops was a record by a wide margin. Production of livestock and livestock products, although smaller than in any year since 1941, was larger than in any year before 1941. Big production of feed grains promised to result in expansion during 1949 in hog production and poultry.

This record farm production was turned out by a farm population one-tenth smaller than in 1940. Use of tractor power continued to increase and there was a continued trend toward larger farm units. The proportion of farms with 500 or more acres increased.

Points emphasized in the report included the following:

1. Large United States food exports helped to end hunger in many countries. Food exports from the United States in the fiscal year 1947–48 were larger on a tonnage basis than during the previous fiscal year and were about 11 per cent above the exports in the first postwar year, 1945–46. Exports of cereal products, including rice, totalled 15.7 million tons, 0.5 million tons above 1946–47, while exports of livestock products and other foods declined a little. Exports of wheat and wheat products (grain equivalent) reached 486 million bushels in 1947–48, almost 10 times the annual average for 1935–39.

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2. World food prospects were brighter at the beginning of the 1948–49 season than at the beginning of any of the preceding postwar years, with European production showing the greatest improvement. Bread grain crops in Europe in 1948 are estimated at least one-third above those of 1947. Conditions in Europe were favorable also for potatoes, sugar beets, root crops for fodder, and other late crops. Some European countries were able both to improve their diets and begin to revive their livestock programs. Food production of the continent was still below that of prewar years, though its population was considerably larger. Hence the need for food imports was still great. Nevertheless, shortages of foreign exchange to some extent compelled restriction of imports. Food production showed some improvement in the Far East, also, though that former export region continued to be a large net importer.

3. Continuation of high per capita demand for farm products in the United States depends in part on prospects for maintaining the high level of industrial activity. Reduction of the current backlog of demand for automobiles, farm machinery, and many types of industrial equipment and construction might be followed by readjustments in both farm and nonfarm prices. The report added that this did not foreshadow a sharp or prolonged depression, and it noted too that United States' farmers are in a stronger position to absorb economic shocks than they have been in many other years.

In his discussion of long-time adjustment, Secretary Brannan says that: "Essentially, agriculture's problem is the problem of finding scope for expanding power to produce. Agriculture forges ahead in production by increased use of machinery, improved plants and animals, means for controlling agricultural pests and diseases, fertilizer materials, and many other facilities. The forces of science and education and the enlightened self-interest of farmers in adopting new techniques invest this process with tremendous momentum. Productive effort may be shifted from one commodity to others, but we could scarcely control the upward thrust of farm production per acre, even if we wanted to do so."

In regard to 1948 prices for farm products, which seemed likely for the full calendar year to average slightly higher than those of 1947, the report said the chief cause of the rise was the fact that the per capita incomes of consumers averaged 2½ times the prewar level. Consumers consequently demanded large quantities of the more expensive foods such as meat, poultry products, milk, and cream. Consumption of these products ranged from 15 to 27 per cent above the prewar level. Consumption of some cheaper foods, on the other hand, was below the prewar level—notably potatoes, sugar, and wheat. Consumption per capita of all food products, though slightly lower than in 1947, was still 12 per cent above the prewar level.

Under these conditions of high consumer buying power and high consumer demand the agricultural price supports had only a minor influence on the agricultural price level. Secretary Brannan said the support price operations had so far involved only modest expense. He added that price supports for agriculture benefitted the Nation as well as the farmers.

Secretary Brannan's report chronicles numerous important changes in United States farming, the result partly of recent developments in agricultural science and technology, and partly of economic forces. Specific examples of scientific contributions made by the Department of Agriculture are reported in chapters on agricultural and industrial chemistry, plant science, animal industry, entomology, and economics.

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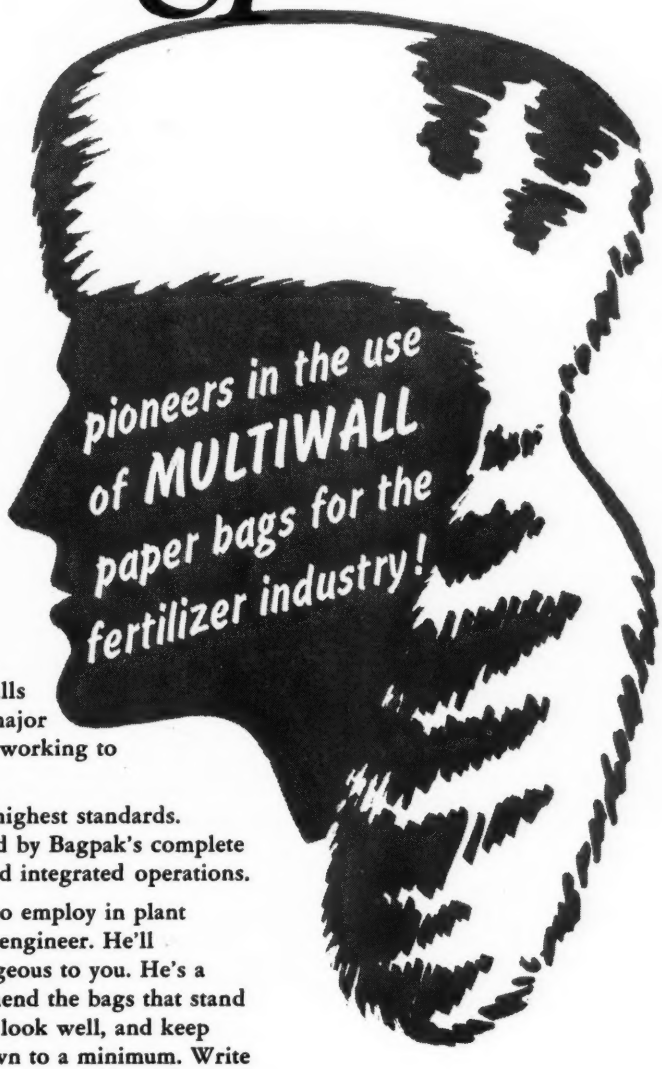

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Frazer To Make Compost Fertlizer

Joseph W. Frazer, automobile manufacturer, and Eric Eweson, biochemist, has announced the organization of Frazer Products, Inc., New York, for the commercial production and sales of compost fertilizer.

The compost, a decomposed mixture of products of the soil, is being manufactured by the company in a "digester," or producing tank can that makes 250 tons of compost a month, Mr. Frazer said.

The new method was said to have been developed by Mr. Eweson after fifteen years of experiment. The new firm will also distribute digester tanks to industrial firms, municipalities or individuals under a licensing agreement.

Mathieson Makes Changes in Sales Personnel

Mathieson Chemical Corporation has announced three recent changes in personnel. Roland F. Boehm, who was District Sales Manager of the Houston, Texas, office, has been transferred to the ammonia department, with headquarters in the company's New York offices. O. J. Theobald, Jr., formerly District Sales Manager of Mathieson's Charlotte, N. C., office, replaces Mr. Boehm as District Sales Manager of the Houston office. J. F. Carey, formerly a sales representative in the Charlotte territory, has been named District Sales Manager of the Charlotte office.

Mr. Boehm joined Mathieson in 1946, when his work was connected with the distribution of the output of the Lake Charles ammonia plant. Previously he held positions with the War Production Board, as Assistant Chief of the Nitrogen Unit, and, after a period of service in the Armed Forces, with Nitrogen Products, Inc., in an executive capacity.

Mr. Theobald joined Mathieson in 1932 as a member of the sales staff and has held a number of positions with the company. He is a graduate of Purdue, and a member of several organizations, including the American Chemical Society and the American Association of Textile Chemists and Colorists.

Mr. Carey received his chemical degree from Tufts College and shortly after his graduation in 1937 joined Mathieson where he has been active in sales and sales development. He is a member of the American Chemical Society and the American Association of Textile Chemists and Colorists.

New Bemis Movie Teaches Sewing Machine Technique

A new sound-color motion picture, "A Stitch In Time," has been produced by the Packaging Service Department of Bemis Bro. Bag Co. as a supplement to the company's Sewing Machine Clinics. The 16mm. film is in two parts, combined projection time about an hour, and completely covers the installation, operation, maintenance and repair of the major types of bag closing sewing machines.

Part I of "A Stitch In Time" covers the technical side of sewing machine adjustment, maintenance and repair. Part II goes into the plants using these machines and shows a wide variety of installations, pointing out how each machine is adapted to its particular bag closing job and explaining a number of operational techniques commonly in use.

This fim was developed as an aid to the three teams of bag closing sewing machine experts who conduct the Bemis Sewing Machine Clinics for customer plants. These clinics consist of experts who go from city to city giving lectures and demonstrations on sewing machine operation and maintenance for the benefit of customer plant representatives. These same experts are also available

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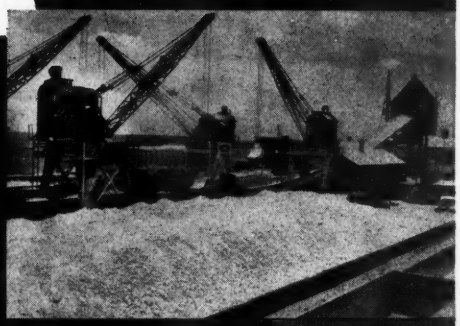

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for plant service visits, giving their help and advice where needed.

Although "A Stitch In Time" is intended as an instructional aid for the Bemis clinics, it is complete enough in itself to present a full Sewing Machine Clinic program. As soon as distribution problems are solved, Bemis plans to make this film available to industrial groups requesting it for the instruction of plant personnel, both supervisory and operative.

Split of Lion Oil Co. Stock Proposed

Directors of Lion Oil Company have proposed for the consideration of the stockholders of the company an amendment to the articles of incorporation of the company increasing the authorized capital stock of the company to five million shares without nominal or par value and splitting the outstanding stock of the company on the basis of two shares for each share outstanding on the effective date of the amendment. The proposal will be submitted to stockholders of the company at a meeting to be held April 12, 1949.

Link-Belt Announces "HS" High-Speed Elevator Bucket

Link-Belt Company announces a new, High-Speed Elevator Bucket embodying all the essential basic principles for high-speed operation to attain maximum capacities in handling free-flowing materials, especially grain products.

The design combines unequaled capacity, durability, low operating cost, and exceptional sr)tional strength with light weight.

The new "HS" bucket has been fully proved on actual installations, and quantities of the popular sizes may now be obtained through official distributors, Link-Belt Factory Branch Stores and district sales offices. Sample buckets are available for inspection.

The new bucket is particularly recommended for handling grain, soft feeds, and other lightweight, fluffy, granular, or powdered fine free-flowing materials which are not excessively abrasive.

Buckets may be mounted on elevator belt at intervals or continuously, depending upon the capacities required.

Old-style buckets on existing elevators may now be replaced with the new "HS" High-Speed bucket, to attain a substantial increase in handling capacity.

The information in new book includes dimensions; weights; list prices; cubical contents; table of standard punching for belts; belt speeds; capacity factors; and specific examples for figuring both the capacity of elevator legs in bushels per hour and the elevator horsepower.

A copy of new book will be sent to any interested reader promptly upon receipt of request, which may be addressed directly to the nearest office of the company.

Union Special Issues New Bag Closing Machine Bulletin

Union Special Machine Company, Chicago, Illinois, has recently issued a new descriptive bulletin, No. 200, on its equipment for closing filled textile and paper bags. The new brochure gives complete information about Union Special sewing heads, columns, tables, conveyors, and accessories.

To facilitate selection of machines, the bulletin contains easy-to-use tables which detail the characteristics of both sewing heads and machines. A packer, knowing his daily capacity, bag sizes, weights, and type of closure required, can quickly locate in these tables the exact Union Special Bag Closing Machine to fit his particular needs.

In addition to detailed descriptions and photographs of equipment, the brochure contains many installation pictures which show the adaptability of the equipment to various plant conditions. The stitch types and variety of closures—plain sewed, Dubl-Tape, filter cord, tape-bound—made by the sewing heads are also illustrated and explained.

As explained in the new bulletin, when special filled bag closing equipment is needed for special plant conditions, it can usually be produced from the many Union Special basic

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A copy of the bulletin may be had by writing to Union Special Machine Company, 411 North Franklin Street, Chicago 10, Ill.

MORE ARMY AMMONIA FOR FERTILIZER

(Continued from page 11)

"The provisions of Public Law 793 restrict the allocation of the 10 per cent program to certain plants which were producing ammonium sulphate during the six months preceding enactment of the law or which were facing imminent shut-down. In practice, these restrictions may become a deterrent to full fertilizer production. Already, certain sulphate plants to which allocations of ammonia have been made are unable to handle the full amount of their allocation. The result may be the production of ammonia for the Army at the Cactus ordnance works will be curtailed for lack of storage space unless some means are found to turn the Cactus production to other plants than those named in Commerce Department orders.

The 50 Per cent Export Program

"The export program has worked reasonably well but the production and demand relationship is so much improved that abandonment of the 50 per cent program would work no harm.

"Approximately 30,000 tons of contained nitrogen have been diverted from Army production to meet the requirements of this program. The production in Army-controlled plants in 1950 and 1951 will be so increased, however, that the Army can meet the full demands of the occupied areas and still supply substantial quantities to move in export without requiring direct legislation.

"The cooperating nations of the European recovery plan, which are the largest claimants of United States fertilizer exports, have procured nitrogenous fertilizer through normal commercial channels. If such a program of procurement is continued, the Army best can serve the program by releasing to domestic fertilizer plants the production of anhydrous ammonia not required for the occupied areas.

General Recommendations

"The ammonia required for the 10 per cent and the 50 per cent programs has been released by the Army from the Cactus ordnance works. This plant, in accordance with congressional directive, was leased by the Army in the spring of 1948. Since then, its production has been increased substantially. The Army holds a four-year option on Cactus production and has exercised its option in 1949. If the Army can meet its requirements for the occupied areas from the Morgantown and Ohio River ordnance works in 1950, it should permit the production of Cactus to move into normal trade channels to relieve the domestic situation and meet export requirements, in accordance with the terms of the lease. In addition, it is recommended that the fertilizer trains which are in process of transfer to San Jacinto be leased as soon as practicable on terms similar to those made at Cactus."

JANUARY TAX TAG SALES

(Continued from page 14)

tons, or 4 per cent less than the 4,592,000 tons reported for the same period last year, and roughly the same as the comparable 1946–47 total.

Sales in the ten Southern States amounted to 3,200,000 tons, a decline of 7 per cent from comparable 1947–48 figures and of 11 per cent from the 1946–47 total. Increases over last year's figures reported by five of the states, ranging from less than 1 per cent in Texas to over 99 per cent in Arkansas, were insufficient to offset decreased tonnages in Virginia, the Carolinas, Georgia and Florida. Southern States' figures, expressed as percentages of total tax tag sales, have also declined over the past three years. In July-January 1946–47, the Southern States accounted for over 81 per cent of such sales; a year ago this percentage had dropped to 75. This year the figure stands at 72 per cent. North Carolina remains the leading state in tax tag sales.

In the Midwestern States, aggregate sales totaled 1,225,000 short tons, 7 per cent more than during the same period last year and

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46 per cent greater than the comparable 1946–47 equivalent tonnage. All four Midwestern States reported sales well above those shown for 1946–47, but two of the states, Kentucky and Kansas, were below 1947–48 in tag sale volume during the latest July-January period. Sales in Kentucky were 1 per cent and in Kansas 27 per cent less than during the same period a year ago. The other two states, Indiana and Missouri, continued to report increases; sales in Indiana were 4 per cent and in Missouri 56 per cent above those of the previous year. The 604,000 tons total reported by Indiana during this period was greater than that of any other Midwestern state and was exceeded only by North Carolina's cumulative total of 771,000 tons during the seven-month period ended this January.

TVA DEFENDS FERTILIZER OPERATIONS

(Continued from page 9)

keeping with its understanding with TVA, the average price would equal TVA's average production cost.

It is a fact that during World War II TVA's cost of manufacturing concentrated superphosphate fertilizer was abnormally high. It was high because three out of every four tons of elemental phophorus produced by TVA went into munitions (TVA supplied 60 per cent of the phosphorus used by the armed services). Phosphorus was thus available for fertilizer manufacture to a very limited extent and then only as and when military requirements of the moment had been met. The resulting small-scale and intermittent fertilizer manufacturing was high cost. The report ignores the fact that the TVA chemical plant is a dual-purpose munitions-fertilizer plant, with munitions production taking precedence over fertilizer production in time of war.

TVA Research Advances Phosphate Fertilizer Technology

The report fails as much as to mention TVA'S greatest contribution to cheapening the production of fertilizers, namely, the development of concentrated phosphate fertilizers and processes for their manufacture. TVA has devoted most of its attention to phosphates because (1) most of the Nation's soils need phosphate and (2) phosphate fertilizer technology has not kept pace with the Nation's needs. The only areas of commercially workable phosphate rock deposits in the United States are in Tennessee, with 1 to 2 per cent of the deposits; Florida, with 25 to 30 per cent; and the Rocky Mountain states, with almost all of the balance. The cost of transportation is thus a major element in the price the farmer pays for phosphate fertilizer. Since concentrated material can be shipped for the same price as low-analysis material, concentrated material is the more economical, provided the costs of manufacturing can be kept in line.

TVA has developed a process for making a fertilizer, called fused tricalcium phosphate, containing 28 per cent P_2O_5, almost 50 per cent more than in the ordinary superphosphate produced by industry for over one hundred years. TVA has developed a process for making another fertilizer, calcium metaphosphate, that contains 61 per cent P_2O_5, or more than three times the amount of P_2O_5 in ordinary superphosphate. Neither of these processes is mentioned in the report.

TVA has many other experiments in various stages of development from the laboratory test tube to the plant sized proving ground: a continuous mixer to replace the lower batch mixing method traditionally used in making superphosphate, an electric furnace with a revolving crucible that "stirs" the furnace charge and thus permits the use of phosphate-bearing sands without prior treatment, a blast furnace process for making phosphoric acid in areas without adequate electric power, processes for making combination phosphate-nitrogen fertilizers of unusually high concentration, and many more developments.

These developments are attracting the attention of the fertilizer world; hundreds of fertilizer chemists and engineers from private industry visit the TVA plant each year to observe and study new developments. These are TVA's greatest contributions to cheapening the production of fertilizer. Not one of these "intangibles authorized by the Congress" is mentioned in the report.

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For an Alphabetical List of all the Advertisers, see page 33

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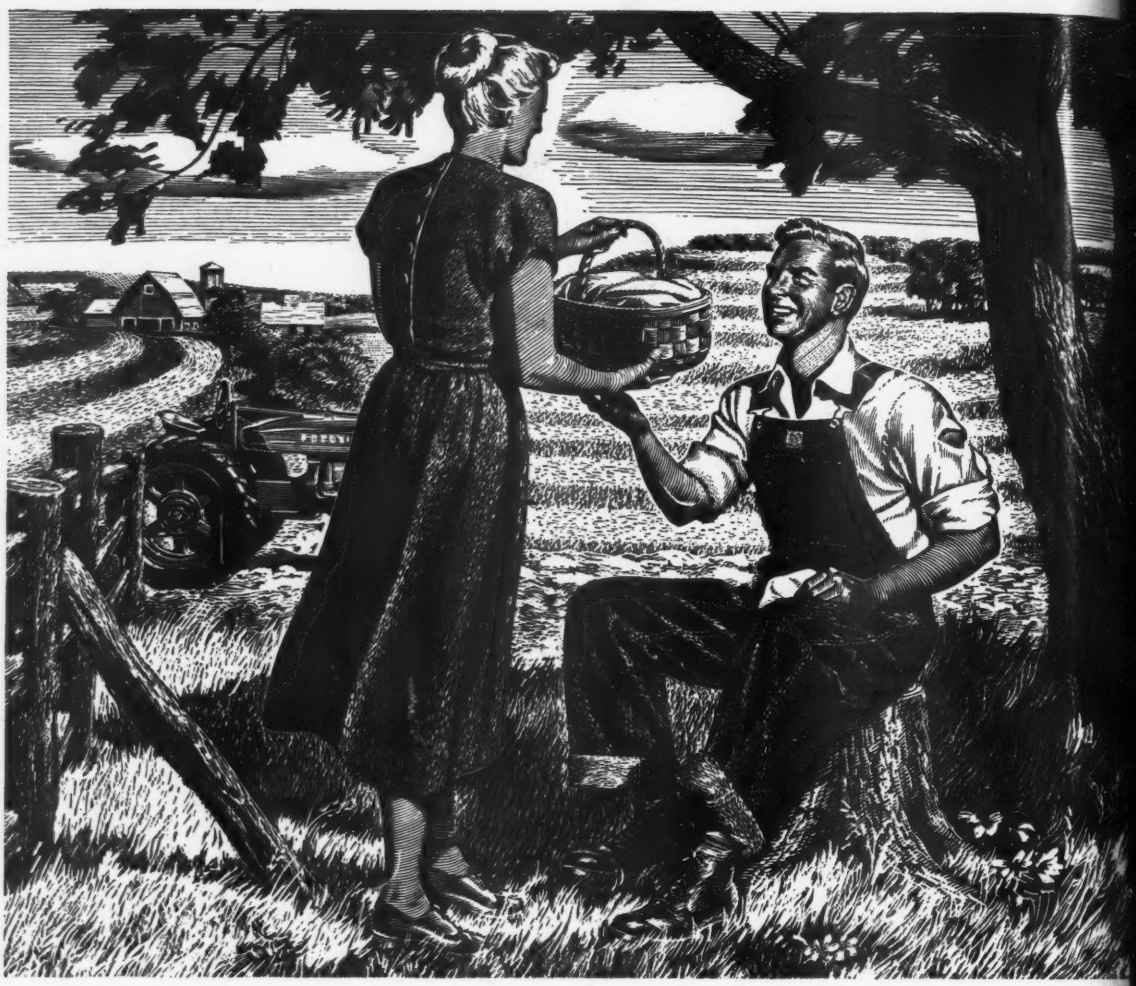

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